**Exercise   1**   (a) *The average rate of change of the cosine function on the interval $\left[0, \frac{\pi}{2}\right]$ is $AV_{[0, \frac{\pi}{2}]} = \boxed{-\dfrac{2}{\pi}}$.*

(b) *The average rate of change of the cosine function on the interval $\left[0, \frac{5\pi}{2}\right]$ is $AV_{[0, \frac{5\pi}{2}]} = \boxed{-\dfrac{2}{5\pi}}$.*

(c) *The average rate of change of the cosine function on the interval $\left[\frac{\pi}{2}, \pi\right]$ is $AV_{[\frac{\pi}{2}, \pi]} = \boxed{-\dfrac{2}{\pi}}$.*

(d) *The average rate of change of the cosine function on the interval $[0, \pi]$ is $AV_{[0,\pi]} = \boxed{-\dfrac{2}{\pi}}$.*

(e) *Select all intervals on which the cosine function is decreasing.*

   ***Select All Correct Answers:***

   (i) $\left(\frac{\pi}{2}, \pi\right)$ ✓

   (ii) $\left(0, \frac{\pi}{2}\right)$ ✓

   (iii) $(0, \pi)$ ✓

   (iv) $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$

   (v) $\left(0, \frac{5\pi}{2}\right)$